

Post-Disaster Measures: Reconstructing Cities and Housing, Takahiro Shibata,
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(Abstract)

POST-DISASTER MEASURES: RECONSTRUCTION CITIES AND HOUSING

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I. Reconstructing Cities

Soon after the Great Hanshin-Awaji Earthquake, Hyogo Prefecture started conducting surveys of the damage in urban areas. In two to three weeks, building restrictions were imposed in areas requiring urgent urban replanning. Two months later, specific urban plans, including projects for redeveloping urban areas, were formulated.

Meanwhile, in an effort to carry out early restoration and reconstruction of the affected areas, the Hyogo Prefectural Government formulated the Great Hanshin-Awaji Earthquake Reconstruction Plan (the Hyogo Phoenix Plan) in the six months following the earthquake. Concurrently, the Hanshin-Awaji Basic Urban Reconstruction Plan was drafted as a specific program for the reconstruction of urban areas.

Based on the lessons learned in the earthquake, the following guidelines for creating safe and secure cities have been established to provide solutions to problems encountered and to give direction for the future:

Firstly, establish a highly disaster-resistant multi-centered and multi-networked metropolitan structure by appropriately Metropolitan cores with independent urban functions, and improving transportation and information networks among them.

Secondly, strengthen disaster-management functions in cities by allocating wide-area relief and restoration bases adjacent to urban areas while taking into account land, sea and air access; and in urban areas building Regional Safety Cores and Community Safety Cores to serve as bases for evacuation of the local residents and for relief activities.

II. Reconstructing Housing

To reconstruct the large housing stock lost in the earthquake at the earliest time, Hyogo Prefecture formulated in August, 1995 the Hyogo Prefecture Three-Year Housing Reconstruction Plan, in which 8 policies for supplying housing, such as three-year period for building permanent housing and the active construction of public rental units, and 37 specific aid programs for those affected in the earthquake are incorporated.

Also formulated in July, 1996 to facilitate the affected citizens' early and smooth transition to permanent housing was the Comprehensive Program for Moving to Permanent Housing which details several assistance plans, such as securing public housing and reduced rents for the low-income group, reduced financial burden for private rental housing for the mid- and low-income group, and enhanced support for home owners in reconstructing their houses.

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Post-Disaster Measures: Reconstructing Cities and Housing

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I. Topic Description and Policy Issues

The Great Hanshin-Awaji Earthquake far exceeded the assumptions made in Hyogo Prefecture's disaster management plans, requiring an enormous amount of emergency restoration work to be carried out on a daily basis, without a manual on post-disaster measures, and the urgent formulation of both short- and long-term reconstruction plans. In detailing what Hyogo Prefecture has done after the earthquake concerning cities and housing, I hope that our experience will benefit future disaster management plans and city planning in both of our two countries.

II. Background

1. Promoting Reconstruction of Urban Areas

Soon after the Great Hanshin-Awaji Earthquake, Hyogo Prefecture began a series of surveys of the damage in urban areas. While formulating a reconstruction master plan, 14 districts requiring urban replanning were identified within two to three weeks and building restrictions were imposed accordance with the Building Standards Act. Two months later, urban plans, including land readjustment projects for 10 districts and urban redevelopment projects for 6 districts, were drawn up for areas where regional urban plans were necessary.

In consideration of the difficulty in notifying and obtaining agreement from the citizens involved, in the confusion of the disaster areas, a two-stage process was adopted for deciding on planning.

In the first stage, only the framework of the plan, focusing on target areas and major streets, was set. Details would be set out in the second stage following consultation with and obtaining consent from citizens.

Meanwhile, in an effort towards an early return to normal life and the restoration and reconstruction of the affected areas, the Great Hanshin-Awaji Earthquake Reconstruction Plan

(the Hyogo Phoenix Plan) was formulated in the six months following the earthquake. Concurrently, the Hanshin-Awaji Basic Urban Reconstruction Plan was drafted as a specific program for the reconstruction of urban areas. As a blue print for urban reconstruction, the Hanshin-Awaji Basic Urban Reconstruction Plan provides a basis for the future city planning master plan and a guideline for urban reconstruction projects. (fig.1)

2. Urban Reconstruction Plans

Below is the summary of the Hanshin-Awaji Basic Urban Reconstruction Plan.

1) Lessons from the Earthquake

Of the lessons we learned from the earthquake, the following 10 relate to city planning and are considered to be important challenges for improving cities in the future.

① Living with Nature

The extent of damage to buildings revealed a connection with the properties of the ground such as the existence of active faults, whether they stood on delta land. Damage was also evident to buildings which stood on steep slopes in the foothills. While we must weigh the results of future research, it is clear from these facts that in order to assure safe living in cities, there is a need to formulate plans, such as preserving green areas at the base of mountains for appropriate land use in harmony with nature and to promote urban development that is in balance with the ecosystem.

② The Importance of Water and Greenery

Given that roadside trees and hedges around private homes contributed to containing the spread of fires, and that natural rivers, water for agricultural use, the sea, underground water, and other sources were useful in either extinguishing fire or supporting daily life, it is important that the development of networks of water and greenery be promoted as part of the "soft" infrastructure of cities.

③ The Dispersement of Urban Functions

Because the disaster affected the central urban areas where government, culture, business, and other urban functions were concentrated, the earthquake shut down the entire city. Given this, it is important to build an urban structure in which functions are appropriately dispersed and in which leeway and the possibility of substitution exist.

④ A Balanced System of Transportation

The severance of the east-west transportation routes by the earthquake greatly hindered rescue and restoration activities and brought urban functions to a virtual halt. Consequently, there is a need to construct a transportation system in which east-west and north-south access are balanced and in which a wide variety of alternate routes exists.

⑤ The Importance of Urban Infrastructure

Numerous fires broke out in densely populated areas of mixed residential and industrial use. As these fires spread, they created widespread destruction in entire districts. Therefore, it is important to urge a rearrangement of urban space, creating basic public facilities such as roads, parks, and public squares and placing these into the urban landscape in an appropriate manner.

⑥ Enhancing the Ability of Buildings to Withstand Earthquakes and Resist Fires

Many lost their lives when decrepit housing collapsed. Even solidly constructed buildings, however, collapsed. It is therefore, important that public facilities and other buildings be made better able to withstand earthquakes and resist fires.

⑦ Toward the Nurturing of Local Communities

Rescue and disaster relief activities undertaken independently at the community level were fairly effective. It is important to nurture the development of local communities and to spur the creation of independent disaster management systems as well as to urge the kind of urban development which permits smooth evacuation and rescue operations during disasters.

⑧ The Systematic Provision of Disaster Management Centers

Many problems related to securing bases of operation were encountered by those who had come from around the country to assist in rescue and restoration activities. Given also that parks, schools and other nearby facilities were effectively used as evacuation areas, it is necessary to create a systematic network of Disaster Management Centers that reflects consideration of the layout of urban districts.

⑨ The Importance of Securing Means of Telecommunication

The telephone was the primary means of conveying information. But because calls flooded into the disaster area, the system was overloaded and paralyzed. In view of this, the development

and spread of varied and multifarious means of telecommunications are necessary.

⑩ The Importance of Urban Life-Supporting "Lifelines"

The damages to "lifelines" facilities at the end of the distribution chain caused prolonged inconvenience to urban life and economic activities. In light of this, it is important that a fail-safe approach be developed which assures that the entire system will not be paralyzed in the event of disaster.

Based on these lessons, the two main concepts of the Hanshin-Awaji Basic Urban Reconstruction Plan have been identified as follows: forming multi-centered network-type metropolitan structures; and boosting disaster-prevention functions. (fig.2,3)

2) Formation of Multi-Centered Network-Type Metropolitan Structures

① Basic Policy

Establish a highly disaster-resistant multi-centered and multi-networked metropolitan structures by appropriately dispersing urban functions via the building of new metropolitan cores with independent urban functions, the development of city centers and subcenters, and improving transportation and information networks among them.

② Building New Metropolitan Cores and Developing the Affected Urban Areas

In coastal and inland areas, build new metropolitan cores, containing integrated functions of residence, business, commerce and industry, where reconstruction-related housing and industrial facilities can be accommodated. At the same time, by urgently implementing the reconstruction and development of affected areas, safe and secure city building will be promoted by giving a new life to communities.

③ Strengthening Urban Networks

By building grid-type expressway networks connecting city centers and metropolitan cores, and a multiple and overlapping transportation system consisting of railroads, port and harbor, and airport, the transportation infrastructure will be strengthened.

The reliability of our "lifelines" (water, electricity, gas, etc.) will be enhanced by burying Power Lines underground, constructing multi-purpose underground ducts for gas and water, and providing the groundwork for information communications such as the installment of satellite

communications and optical fibers.

④ Building Cities Rich in Water and Greenery

While preserving and maintaining forested areas in the Rokko and other mountain ranges, open spaces in urban areas, including parks and green districts will be systematically created.

3) Strengthening Disaster-Management Functions

① Establishing Emergency Management Cores

As a base for regional relief and restoration activities, Emergency Management Cores, featuring information and communications functions for disasters, will be step up in parks and open spaces adjacent to urban areas, taking into account land, sea and air access.

② Increasing Greenery and Fire-Prevention in Urban Areas

The disaster-prevention features of the entire urban area will be enhanced by promoting the systematic improvement of roads, parks, and rivers, and the preservation and maintenance of green districts to form a systematic network of water and greenery in cities, and by promoting increased greenery and fire-resistance in urban areas. In heavily-populated urban areas, in particular, Firebreak Zones, which check the spread of fire and serve as evacuation routes, will be developed to divide the cities into segmented blocks.

③ Establishing Disaster Management Cores in Urban Areas

In urban areas which have been separated into cores by Firebreak Zones, Regional Safety Cores will be set up around parks and other open space within a radius of every 2 km.

In addition, Community Safety Cores (community disaster management cores) will be located in every 1 km radius, equivalent to elementary school districts.

4) Systems for Urban Reconstruction

① Support for Citizens' Community Development

For citizens to actively participate in community development, information on city planning will be provided, and a system to provide a variety of support, including consultation on methods and regulations concerning community development and dispatching advisors, will be

developed.

② Promoting Supply of Housing in Regional Urban Development Projects

In implementing land readjustment projects and urban redeveloping projects, housing will be supplied in a way to create new local communities while responding to the requests of the affected citizens.

3. Current State of Urban Reconstruction Projects

Based on the above urban reconstruction plans, Hyogo Prefecture has implemented various urban reconstruction projects. For urban area development projects, such as land adjustment projects, a community development council has been formed by local citizens in each district. The councils have been holding a series of discussions with respective local governments and, upon reaching agreement with the local governments, are successively moving on to decide on city plans and projects for the 2nd stage.

In the coastal district in Kobe, where one of the priority reconstruction projects is being implemented, construction of housing and an office building, where WHO (World Health Organization) is one of the tenants, is under way, together with the improvement of infrastructures by way of land readjustment projects.

Furthermore, to construct a central emergency management center, located to the north of Kobe and covering the entire prefecture, projects based on the reconstruction plan are being implemented in various locations. This includes the formulation and the implementation of the urban plan for the Comprehensive Emergency Management Park which will be the core facility of the central emergency management center.

4. Housing Reconstruction Plans (Formulating "Hyogo Prefecture Three-Year Housing Reconstruction Plan")

Reconstruction of housing constitutes a vital element for recovery from the earthquake. It is not too much to say that real reconstruction will not come without housing reconstruction.

As a large-scale urban disaster that has taken place in aging society, the earthquake has posed us a set of entirely new challenges, including what to do with the large number of affected citizens, many of whom are aging, requiring us to face many problems to which conventional measures cannot offer solutions.

To cope with this, Hyogo Prefecture formulated in August 1995 the "Hyogo Prefecture Three-Year Housing Reconstruction Plan," in which 37 specific aid programs for the affected, such as support for reconstructing privately-owned housing, rented private-sector housing, and apartments, are incorporated. In line with the Plan, we have implemented advanced programs that go beyond conventional frameworks. They are: ① Active programs, such as a large supply of housing by public enterprises; ② Cooperation with public health, medical services and social welfare institutions for creating environments friendly to the elderly; and ③ Supply of low-cost, high quality housing by introducing imported housing.

The "Hyogo Prefecture Three-Year Housing Reconstruction Plan" stipulates a supply of 125,000 houses in three years. For early supply of 80,500 units of public housing, over 60% of the target figure, steady efforts are being made in joint cooperation among Hyogo Prefecture, concerned municipalities, Housing and Urban Development Corporation and Housing Supply Public Corporations, to accelerate active housing supply and support for rented private-sector housing.

5. Programs for Housing Reconstruction

1) Conduct "Surveys with Residents of Emergency Temporary Housing," etc.

Construction of emergency temporary housing started soon after the earthquake, providing some 48,000 houses in less than 6 months. 18 months after the earthquake, some 41,000 families are still living in temporary housing.

To investigate the current income of residents of temporary housing and invite what they have to say about their future housing, Hyogo Prefecture conducted "Surveys of Residents of Emergency Temporary Housing" in February and March 1996. Of 42,000 families surveyed, 37,000 families provided us with answers.

A preceding survey in November 1995 showed that, of 16,000 affected citizens who are not residing in temporary housing, approximately 23% belong to an aged household, or whose householder is 65 or above, and approximately 42% belong to a low-income group, or whose annual income is less than 3 million yen. The last survey showed that, of the affected citizens residing in temporary housing, approximately 42% belong to an aged household, with approximately 90% of them being a family of one or two persons, 70% belong to a low-income group, and 68.3% wish to move to public housing, with more than half of them wishing to return to where they once lived before the earthquake.

Based on these findings, we can conclude that many of the affected citizens belong to the elderly

and low-income group, who find it hard to reconstruct their housing on their own, and impossible to bear the rent burden of a new house.

2) Formulating the "Comprehensive Program for Moving to Permanent Housing"

To quickly build housing necessary for restoring the affected citizens' life, and promote a comprehensive program for a smooth move to permanent housing, by steadily promoting the "Hyogo Prefecture Three-Year Housing Reconstruction Plan," Hyogo Prefecture in July 1996 formulated the "Comprehensive Program for Moving to Permanent Housing," a housing reconstruction program which pays maximum attention to the needs of the affected based on the findings of the "Surveys with Residents of Emergency Temporary Housing."

With the Program as a guideline, Hyogo Prefecture will promote the reconstruction of multifaceted, quality housing that successfully fits the aging society in the 21st century.

① Increased Supply of Reconstruction Public Housing, etc.

After listening to the affected citizens' needs concerning regional characteristics and scale of housing, the supply of reconstruction public housing was increased to 38,600.

② Housing Supply Friendly to the Elderly

Out of consideration to the large number of senior citizens, supply of safe and comfortable housing which is friendly to the elderly will be promoted in cooperation with the system of public health, medical services and social welfare. Specific programs include: *Development of housing designed for the elderly (barrier-free housing); *Promotion of a system to supply housing dedicated to the elderly (Silver Housing); *Development of reconstruction public housing which incorporates an idea of collective housing (community-life type); *Establishment of a reconstruction housing community plaza (base for local welfare services and volunteer activities), etc.

③ Moving into Permanent Housing

A plan was made to complete the moving of citizens who used to reside in public housing from temporary housing to permanent housing by the first half of 1998 at the latest, and the entire body of affected citizens, by the first half of 1999. In line with this, 13,100 and 14,300 housing units will be supplied by the end of 1996 and 1997, respectively, to supply all of the planned 38,600 housing units by the end of 1998.

④ Reduced Rent of Reconstruction Public Housing

Depending on the income of residents, locations and scale of housing, rent of reconstruction public housing is reduced to a level which residents can afford without difficulty. An example of reduced rent for a household with particularly small income is 6,000 yen plus even in a city center if it's a small house.

⑤ Unified Invitation of Applicants to Reconstruction Public Housing, etc.

Regarding moving into reconstruction public housing, etc., different sponsors of public housing are leaving behind conventional frameworks and cooperating with one another to conduct uniform registration of applicants and selection of their housing, etc.

⑥ Enhanced Support for Reconstructing Privately-Owned Housing

While expanding areas eligible for the support scheme, sources of finance have been expanded to include private-sector financing in addition to public financing. Also added to the support scheme are a government grant for paying a fixed rate of interest for large-scale repairs, that for special financing for the aged, and support for demolishing-and-rebuilding affected apartments by way of fixed period leases.

⑦ Establish a System to Reduce Burden of Rent for Private-Sector Housing

To reduce initial burdens of the mid- and low-income affected citizens of their rent for private-sector housing, a system was established to subsidize their rent with an upper limit of 30,000 yen per month by the end of 1999.

6. Current State of Housing Reconstruction

As of June 1996, more than 80% of the land for reconstruction public housing, some 60% for reconstruction quasi-public housing, and some 70% for housing built by Housing and Urban Development Corporation and Housing Supply Public Corporations have been secured, and construction work is progressing favorably.

As for private-sector housing, high growth of 70.6% of new housing starts in 1995 was recorded over the previous year. In the 10 cities and 10 towns affected, 117,236 new housing starts were recorded immediately after the earthquake, that is, between February 1995 and May 1996, which is double the normal rate.

III. Proposals

In light of the above, Hyogo Prefecture will explore the following agendas concerning cities and housing.

- * Projects and policies concerning development of disaster-resistant communities

- e.g. Projects to improve heavily-populated urban areas

- System to provide support to activities of citizen-led community development

- * Roles and functions of Disaster Management Cores and complementary development plans

- e.g. Functions of Emergency Management Cores for relief activities and storage

- Use of Regional Safety Cores as shelters and sites for temporary housing

IV. Cooperative Mechanisms

Learning from the massive vertical-thrust earthquake that hit this metropolis with its graying population, we believe it necessary to promote further cooperation between public agents and local governments of our two countries through exchanges of information on disaster-management plans, in which the United States is ahead of Japan, centering on the above agendas.

V. Related Issues

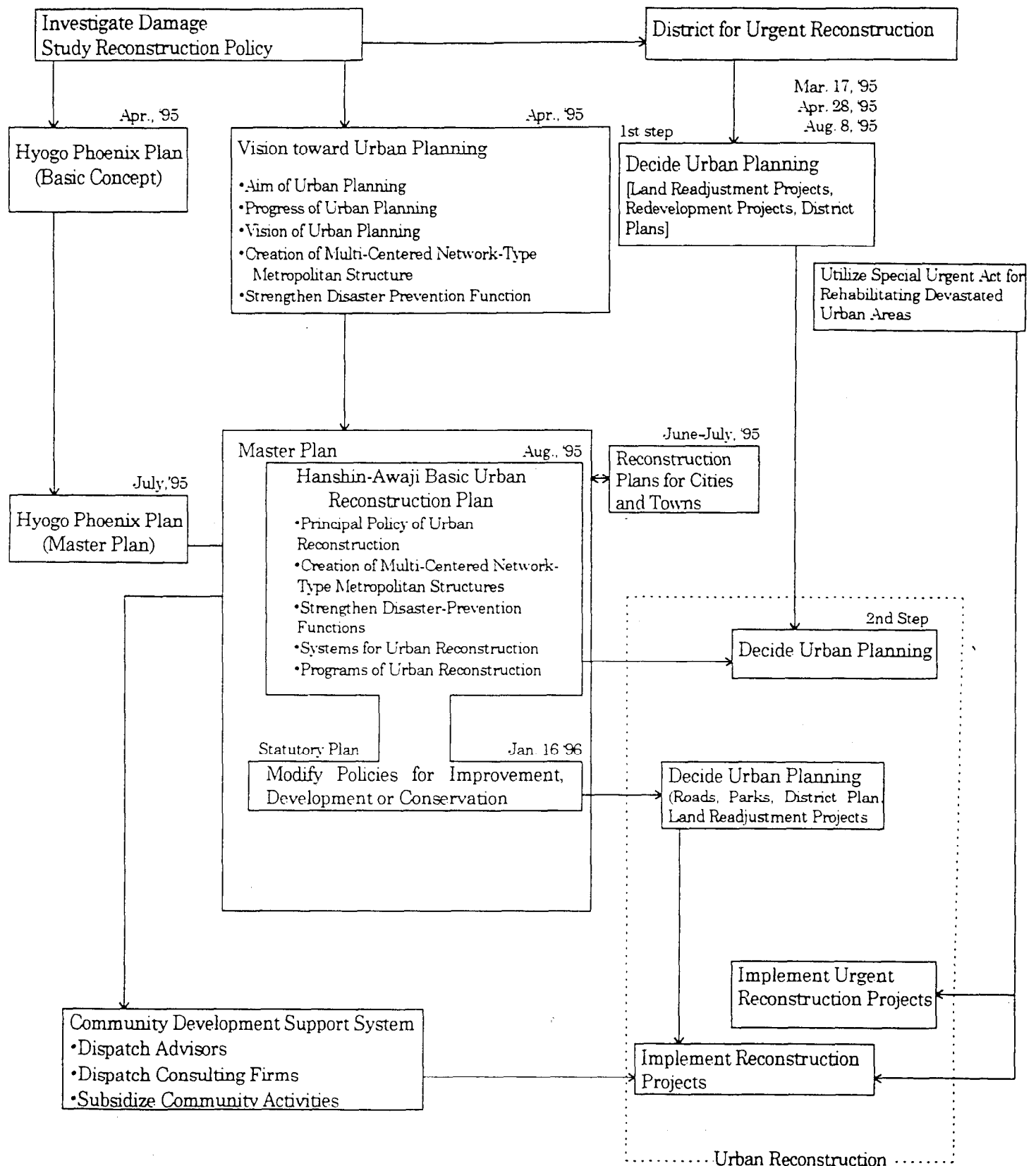
VI. Key Reference

- * Hyogo Prefectural Government, The Great Hanshin-Awaji Earthquake Reconstruction Plan (the Hyogo Phoenix Plan), Kobe, July 1995

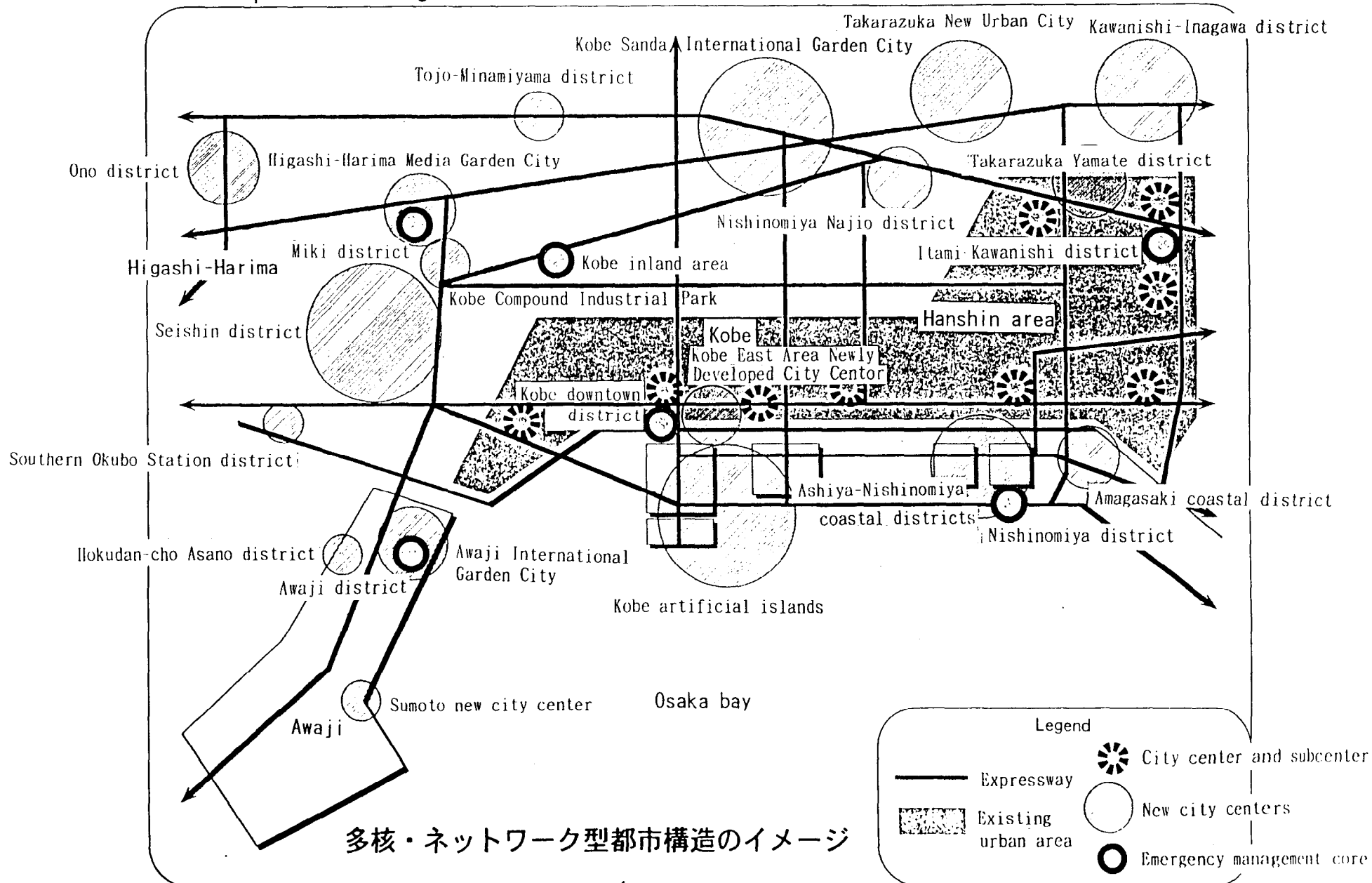
- * Hyogo Prefectural Government, Hanshin-Awaji Basic Urban Reconstruction Plan, Kobe, August 1995

- * Hyogo Prefectural Government, Hyogo Prefecture Three-Year Housing Reconstruction Plan, Kobe, August 1995

Approach towards Urban Planning for Earthquake Reconstruction(fig.1)



Conceptual drawing of multi-centered network-type metropolitan system (fig. 2)



Disaster Management Bases (fig. 3)

